

Appl No. 09/693,019
Amdt. Dated September 20, 2004
Reply to Final Rejection of July 09, 2004

APP 1204

Amendments to the Specification

Please replace the paragraph beginning at page 10, line 18 with the following:

In accordance with a third aspect of the present invention there is provided, for use in a SIP-compliant network having a plurality of nodes, a SIP-EYE Agent software or program for monitoring and tracking all Transmission Control Protocol (TCP) connections and their related identifiers. The SIP-EYE Agent thus comprises a computer readable medium having the executable instructions to monitor the TCP session set up and disconnect messages, to create a data structure for each session containing relevant information about the session, to write it into the mobile station's memory or disc,
to send INFO messages, containing address binding instructions, to the corresponding host nodes which are engaged in TCP sessions with the mobile station, when necessary.
The SIP-EYE Agent thus maintains: a record of each of the ongoing TCP connections, each record having associated therewith an original IP address of the mobile ~~node~~ station, a previous IP address of the mobile ~~node~~ station, a current IP address of the mobile ~~node~~ station, and an original IP address of a corresponding host node; wherein the original IP address of the mobile ~~node~~ station is the IP address of the mobile ~~node~~ station at the beginning of the TCP connection, the previous IP address of the mobile ~~node~~ station is the last IP address of the mobile ~~node~~ station just before the current IP address of the mobile ~~node~~ station, the current IP address of the mobile ~~node~~ station is the current IP address of the mobile ~~node~~ station, and the original IP address of the corresponding host node is the IP address of the corresponding host at the beginning of the TCP connection.

Please replace the paragraph beginning at page 17, line 21 with the following:

Preferably, the forgoing process can be implemented by an inventive software entity that resides within the mobile station, hereinafter referred to a SIP-EYE Agent 300, that tracks TCP connection set ups and releases within the mobile station, creates required data structures for these connection, and stores them within the mobile station. See Figure 3. The SIP-EYE Agent 300 enables a SIP User Agent to maintain a record of the mobile station's ongoing TCP connections and their associated identifiers. The whole premise of the SIP-EYE Agent 300 is to ensure that the present invention supports TCP as is without any modifications to TCP. The SIP-EYE Agent 300 ~~shall be~~ is thus a simple TCP tracing/monitoring agent with a small foot print residing within the SIP User Agent of a mobile station and a corresponding host.

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Please replace the paragraph beginning at page 27, line 1 with the following:

Figure 7 illustrates signaling flow for handoff. At step 701, in order to create a new session, the mobile station (MS) or SIP server (depending on which registration and configuration approach is used) re-invites the corresponding host (CH) to the mobile station's requests containing new IP address using SIP INVITE. At step 702, the mobile station or SIP server ~~uses the SIP~~ sends a SIP request containing an INFO method to create a short lived tunnel between the previous edge router and controller (P-ERC) and the new edge router and controller to reduce the loss of session transient data. In creating the tunnel, the mobile station or SIP server sends a SIP request message containing an INFO ~~message~~ method to the previous edge router and controller (the previous edge router and controller is the same as the default gateway of the mobile station before getting the new IP address) to bind the old IP address of the mobile station with the new IP address of the mobile station so that transient messages are forwarded to the mobile station's new IP address. The expire field of the SIP INFO method is used to specify the tunnel lifetime (i.e. a time out period after which the tunnel is disconnected) and the body of the INFO method contains the instruction for binding the previous IP address of the mobile station with the current IP address of the mobile station. The previous edge router and controller sends a SIP 200 OK response back to the new edge router and controller to confirm binding of the old IP address of the mobile station with its new one. Simultaneously, at step 703, the SIP-EYE Agent of the mobile station sends a first SIP INFO message to the SIP-EYE Agent of the corresponding host(s) to bind the mobile station's original host (i.e., its original IP address) to the current host (i.e., its new IP address), and a second SIP INFO message to the previous edge router and controller to bind the mobile station's previous host (i.e., its IP address before hand-off) to its current host so that the transient packet data is tunneled to the mobile station's new location and loss of data is minimized. The previous edge router and controller uses IP encapsulation to create a tunnel for forwarding the transient packets to the mobile station's new location. Each edge router and controller shall also have a SIP User Agent to aid in the tunneling process.